

NRL Report August 94

## Low Voltage Electron Beam Lithography

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### Monte-Carlo Simulations.

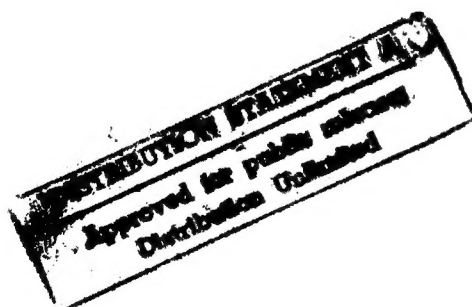
*N00014-92-J-1996*

The software has been completed for Monte-Carlo simulation of scattering of low energy electrons from a line edge using the new low voltage scattering cross-sections developed under this contract. The software properly treats crossings of all surfaces. For example between the sidewall-gap-substrate. This includes re-entrant sidewalls with an undercut.

Figure. 1 shows typical results of a simulation of sidewall slope from a resist line. The simulation ran 10,000 trajectories for 100 points across a line-space 200nm deep and 200nm wide using primary electrons of 1keV. Two sidewall responses are shown from the center of the trench to the center of the resist line. (a) a vertical sidewall (b) 85° sidewall. It can be seen that there is both a shift in the apparent peak position and the half height of the response.

### Future Work.

The effects of sidewall on backscattering response will be systematically studied.



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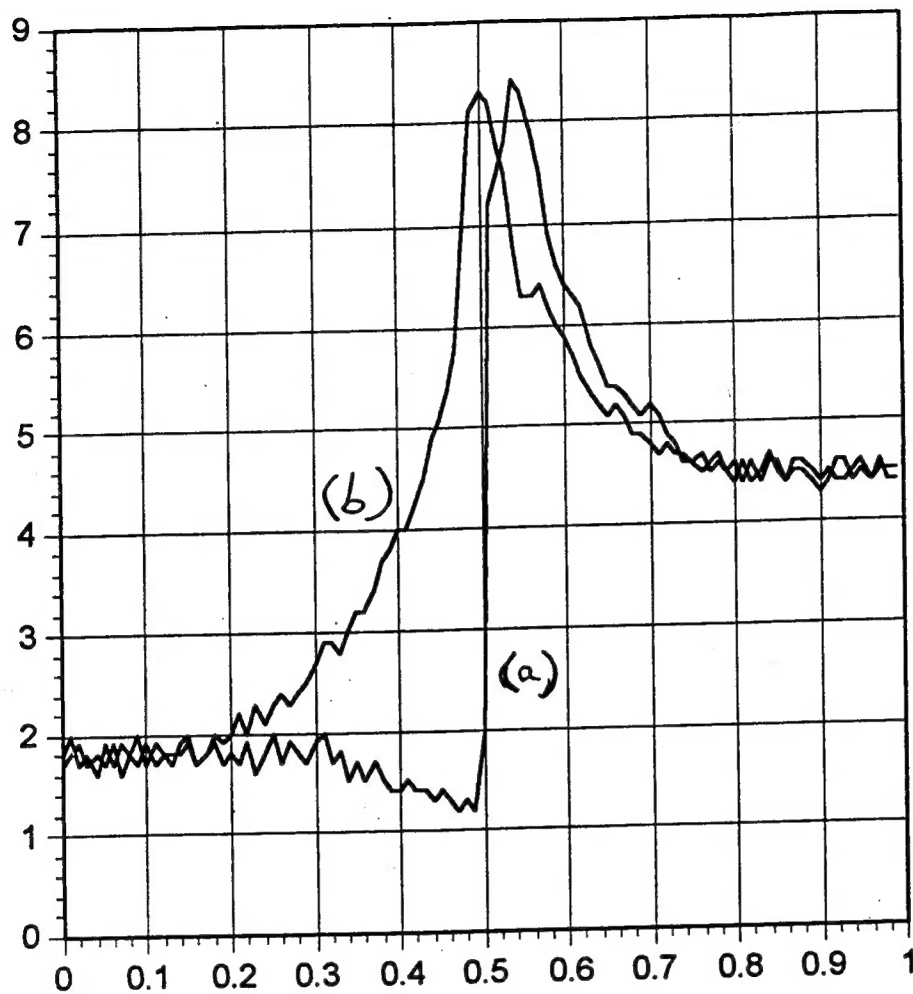


FIG 1

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